

CLAIMS

5 1. An antenna device for a portable radio communication device adapted for receiving radio signals, said antenna device comprising

- an internal radiating element (10) comprising at least one feeding portion (21, 22) connected to a receiver circuit (40),

10 characterised in that

- the radiating element (10) comprises an electrical impedance (30; 30'; 30'') that is controllable in dependence on the desired frequency range of the received signals,
- wherein the at least one feeding portion (21, 22) is connected to a feeding input (40a, 40b) on the receiver circuit, and
- wherein the control input of the controllable electrical impedance (30) is connected to an output (40c) on the receiver circuit (40) intended for the control of the VCO resonance frequency of the receiver circuit.

20 2. The antenna device according to claim 1, wherein the impedance (30; 30'; 30'') is a capacitive impedance.

25 3. The antenna device according to claim 2, wherein the electrical impedance is a varactor diode (30).

4. The antenna device according to claim 1, wherein the impedance (30) is an inductive impedance.
5. The antenna device according to any of claims 1-4, wherein the radio signals for which the antenna device is adapted have a frequency below 110 MHz, preferably between 76 and 110 MHz, and even more preferably between 88 and 108 MHz.
6. The antenna device according to any of claims 1-5, wherein the radiating element is a loop (10).
- 10 7. The antenna device according to any of claims 1-6, wherein the radiating element (10') is arranged in several turns.
8. The antenna device according to any of claims 1-7, wherein the radiating element (10) is arranged on a battery package (230).
9. The antenna device according to claim 8, wherein the radiating element (10) is connected to the receiver circuit (40) by means of connectors provided on the battery package (230).
- 20 10. The antenna device according to any of claims 1-9, wherein the radiating element (10'') is arranged as a spiral.
11. The antenna device according to any of claims 1-9, wherein the radiating element (10') of the antenna device is provided outside of the edge of a PCB (210) provided in the radio communication device.

12. The antenna device according to any of claims 1-11, wherein the radiating element (10) is provided above a dielectric material.

13. The antenna device according to any of claims 5 1-12, comprising at least two orthogonal radiating elements (10), each comprising at least one feeding portion (21, 22) connected to the receiver circuit and an electrical impedance.

14. A portable radio communication device comprising an antenna device according to any of the 10 preceding claims.